

1. A composite material comprising:  
a substrate, said substrate further comprising at least a first layer and a second  
layer, said first layer having a first surface and a second surface; and  
a surfactant applied to the first layer of the substrate;  
5 wherein the surfactant acts to lower the surface tension of a fluid which contacts the  
first layer of the substrate such that the fluid is allowed or more readily enabled to pass  
through the first layer of the substrate, but such that the surfactant does not substantially  
adversely effect the absorption capacity or wicking height of the second layer of the  
substrate, as the second layer of the substrate substantially inactivates the surfactant.

2. The composite material of Claim 1, wherein the first layer of the substrate is a  
nonwoven.

3. The composite material of Claim 1, wherein the second layer of the substrate is an  
absorbent core.

4. The composite material of Claim 1, wherein the second layer of the substrate is a  
superabsorbent material.

5. The composite material of Claim 1, wherein the second layer of the substrate is  
comprised of pulp.

6. The composite material of Claim 1, wherein the second layer of the substrate is  
acidic.

7. The composite material of Claim 1, wherein the second layer of the substrate is  
basic.

8. The composite material of Claim 6, wherein the second layer of the substrate is  
highly acidic.

9. The composite material of Claim 6 wherein the second layer of the substrate has pH  
in the range from about 1 to about, but not equal to, 7.

10. The composite material of Claim 6, wherein the second layer of the substrate has pH  
in the range from about 2 to about 6.

11. The composite material of Claim 6, wherein the second layer of the substrate has pH in the range from about 3 to about 5.
- 5 12. The composite material of Claim 7, wherein the second layer of the substrate has pH in the range from about, but not equal to, 7 to about 14.
13. The composite material of Claim 7, wherein the second layer of the substrate has pH in the range from about 8 to about 13.
- 10 14. The composite material of Claim 7, wherein the second layer of the substrate has pH in the range from about 9 to about 12.
- 15 15. The composite material of Claim 1, wherein the surfactant does not substantially adversely effect the absorption rate of the second layer of the substrate.
16. The composite material of Claim 1, wherein the surfactant does not substantially adversely effect the wicking height of the second layer of the substrate.
- 20 17. The composite material of Claim 1, wherein the surfactant is applied only to the first layer of the substrate.
- The composite material of Claim 1, wherein the surfactant is selected from a class of surfactants having a disulfide bond or those containing a ketal group, siloxal group or the like.
- 25 18. A personal care product comprising the composite material of Claim 1.
19. The personal care product of Claim 19, wherein the personal care product is selected from a diaper, training pant, absorbent underpant, adult incontinence product, sanitary wipe, wet wipe, feminine hygiene product, wound dressing, bandage, and mortuary and veterinary wipe, hygiene and absorbent product.
- 30 20. An absorbent product comprising the composite material of Claim 1.
- 35

21. The absorbent product of Claim 21, wherein the absorbent is selected from a sorbent or wiper.

22. A multi-layered substrate with a surfactant applied thereto, said surfactant selected from the group consisting of a class of surfactants having a disulfide bond, a ketal group, siloxal group or the like,

wherein said surfactant lowers the surface tension of fluids contacting the substrate to which the surfactant is applied such that fluid intake into the substrate is not substantially adversely effected, and such that the surfactant is substantially inactivated upon contacting the second layer of the substrate.

23. The multi-layered substrate of Claim 23, wherein the substrate comprises a personal care product or component thereof.

24. The multi-layered substrate of Claim 24, wherein the personal care product is selected from a diaper, training pant, absorbent underpant, adult incontinence product, sanitary wipe, wet wipe, feminine hygiene product, wound dressing, bandage, and mortuary and veterinary wipe, hygiene and absorbent product.

25. A method for forming a composite material adapted for inactivating surfactants upon contact with a portion of a substrate, said method comprising:  
providing a substrate, said substrate having at least a first layer and a second layer;

applying a surfactant to the first layer of the substrate; and  
subjecting the substrate to at least one condition which facilitates migration of the surfactant from the first layer of the substrate to the second layer of the said substrate;  
wherein the alkalinity of the second layer of the substrate is non-neutral and said non-neutral layer reacts with any of said surfactant which comes in contact therewith such that the absorption and wicking properties of the second layer of the substrate are not adversely effected by the surfactant.

26. The method of Claim 26, wherein the non-neutral layer is a layer with a non-neutral additive applied thereto.

27. The method of Claim 26, wherein the non-neutral layer of substrate has a pH of about 1 to about, but not equal to, 7.

28. The method of Claim 26, wherein the non-neutral layer of substrate has a pH of about, but not equal to, 7 to about 14.

5 29. The method of Claim 26, wherein the substrate is selected from woven fabrics, knit fabrics, nonwoven fabrics, foams, film-like materials and paper materials.

30. The method of Claim 26, wherein the substrate is a nonwoven web.

10 31. The method of Claim 26, wherein the first layer of the substrate is a liner or topsheet.

32. The method of Claim 26, wherein the first layer of the substrate comprises a nonwoven web.

15 33. The method of Claim 26, wherein the second layer of the substrate is an absorbent core material.

20 34. The method of Claim 26, wherein the second layer of the substrate is a superabsorbent material.

35. The method of Claim 26, wherein the second layer of the substrate contains pulp.

25 36. The method of Claim 26, wherein the second layer of the substrate is acidic.

37. The method of Claim 26, wherein the second layer of the substrate is basic.

30 38. The method of Claim 26, wherein the second layer of the substrate has a pH in the range between about 1 and about, but not equal to, 7.

39. The method of Claim 26, wherein the second layer of the substrate has a pH in the range from about 2 to about 6.

35 40. The method of Claim 26, wherein the second layer of the substrate has a pH in the range from about 3 to about 5.

41. The method of Claim 26, wherein the second layer of the substrate has pH in the range from about, but not equal to, 7 to about 14.
42. The method of Claim 26, wherein the second layer of the substrate has pH in the range from about 8 to about 13.
43. The method of Claim 26, wherein the second layer of the substrate has pH in the range from about 9 to about 12.
44. The method of Claim 26, wherein the surfactant may be applied to the entire first layer of the substrate or only a portion thereof.
45. The method of Claim 26, wherein the surfactant is only applied to one surface of the first layer of the substrate.
46. The method of Claim 26, wherein the surfactant may be selected from a class of surfactants having disulfide bond or containing a ketal group, siloxal group or the like.
47. The method of Claim 26, wherein the substrate comprises a personal care product or component thereof.
48. The method of Claim 48, wherein the personal care product is selected from a diaper, training pant, absorbent underpant, adult incontinence product, sanitary wipe, wet wipe, feminine hygiene product, wound dressing, bandage, and mortuary and veterinary wipe, hygiene and absorbent product.
49. The method of Claim 26, wherein the composite material comprises a sorbent, wiper, or component thereof.
50. A composite material comprising:
  - a substrate, said substrate having at least a first layer and a second layer, said first layer having a first surface and a second surface; and
  - a surfactant applied to the first layer of the substrate;
  - wherein the composite material has properties such that when a fluid having a first surface tension contacts the first layer of the substrate, the surfactant acts to lower the surface tension of the fluid to a second surface tension; and

wherein once the fluid having a reduced surface tension has passed through the first layer and into the second layer of the substrate, the surfactant in the substrate begins to inactivate or degrade causing the surface tension of the fluid in the substrate to increase to a third surface tension.

5

51. The composite material of Claim 51, wherein at a time 24 hours after the fluid having the first surface tension contacts the surfactant, the third surface tension of the fluid is at least 5 dynes/cm greater than the lowest second surface tension which is experienced by the fluid.

10

52. The composite material of Claim 51, wherein the third surface tension of the fluid is at least 10 dynes/cm greater than the second surface tension of the fluid at a time 24 hours after the fluid having the first surface tension contacts the surfactant.

15

53. The composite material of Claim 51, wherein the third surface tension of the fluid is at least 20 dynes/cm greater than the second surface tension of the fluid at a time 24 hours after the fluid having the first surface tension contacts the surfactant.

20

54. The composite material of Claim 51, wherein the third surface tension of the fluid is at least 30 dynes/cm greater than the second surface tension of the fluid at a time 24 hours after the fluid having the first surface tension contacts the surfactant.

25

55. The composite material of Claim 51, wherein the substrate is selected from woven fabrics, knit fabrics, nonwoven fabrics, foams, film-like materials and paper materials.

56. The composite material of Claim 51, wherein the first layer of the substrate is a liner or topsheet.

57. The composite material of Claim 51, wherein the first layer of the substrate comprises a nonwoven web.

58. The composite material of Claim 51, wherein the second layer of the substrate is an absorbent core material.

59. The composite material of Claim 51, wherein the second layer of the substrate is a superabsorbent material.

60. The composite material of Claim 51, wherein the second layer of the substrate contains pulp.

5 61. The composite material of Claim 51, wherein the second layer of the substrate is acidic.

62. The composite material of Claim 51, wherein the second layer of the substrate is basic.

10

63. The composite material of Claim 51, wherein the second layer of the substrate has a pH in the range between about 1 and about, but not equal to, 7.

15

64. The composite material of Claim 51, wherein the second layer of the substrate has a pH in the range from about 2 to about 6.

65. The composite material of Claim 51, wherein the second layer of the substrate has a pH in the range from about 3 to about 5.

20

66. The composite material of Claim 51, wherein the second layer of the substrate has a pH in the range between about, but not equal to, 7 and about 14.

67. The composite material of Claim 51, wherein the second layer of the substrate has a pH in the range from about 8 to about 13.

25

68. The composite material of Claim 51, wherein the second layer of the substrate has a pH in the range from about 9 to about 12.

30

69. The composite material of Claim 51, wherein the surfactant may be applied to the entire first layer of the substrate or only a portion thereof.

70. The composite material of Claim 70, wherein the surfactant is only applied to one surface of the first layer of the substrate.

71. The composite material of Claim 51, wherein the surfactant may be selected from a class of surfactants having disulfide bond or a containing a ketal group, siloxal group or the like.

5 72. The composite material of Claim 51, wherein the substrate comprises a personal care product or component thereof.

73. The composite material of Claim 51, wherein the composite material comprises a sorbent, wiper, or component thereof.

Patent # 4,244,660